Software Requirements ~~and Design~~ Specification
Redstone ~~Requirements and Design Review~~Release

CLCS Test Build and Control CSCI

Redstone

Requirements

and

Design Specifications

July 31, 1997

<h1 style="text-align:center">Software Requirements <u>and Design</u> Specification
Redstone <s>Requirements and Design Review</s><u>Release</u></h1>

1. CSCI Test Build & Control

1.1 CSCI Test Build & Control Introduction

1.1.1 CSCI Test Build & Control Overview

Test Build and Control resides in the Shuttle Data Center (SDC) and provides the capability to create, populate, and install the tables and files that make up a Test Configuration Identifier (TCID). For each TCID, tables will be created for a CLCS Function Designator (FD) Directory, the CLCS Gateway Processor(s), a TCID Descriptor, and other tables as required. Tables will be populated with data extracted from the CLCS Database Shuttle Automated Function Executive (DBSAFE) Database[*] and data derived through software processing. Installation will generate deliverable files based on the content of the TCID tables, and install the deliverable TCID files, application software files (including Health and Fusion applications) and Dynamic Data Visualization Tool (DDVT) files into the TCID Staging Area for subsequent transfer to a CLCS set.

Test Build & Control Concept Level Diagram
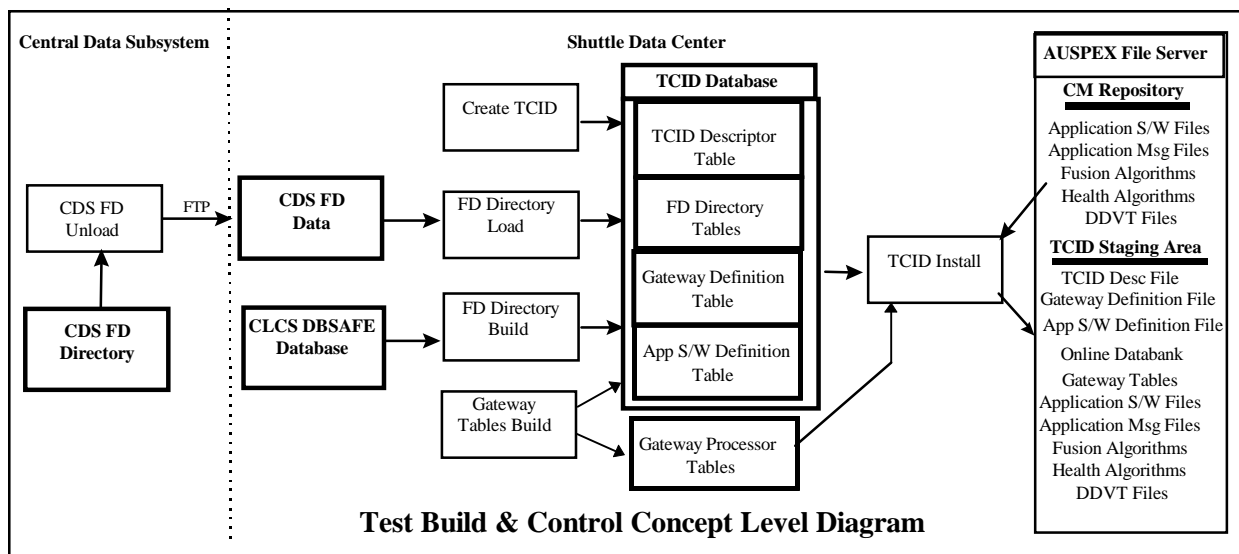
1.1.2 CSCI Test Build & Control Operational Description

Creation of a TCID is initiated at user request via a Graphical User Interface (GUI). The user selects specific options and supplies input parameters required for creating the TCID structure. Via the Create TCID software, the user is verified as a valid user and tables that make up the TCID are created with appropriate permissions.

For Redstone, the user initiates a CDS function via the CCMS System Interface (CMSI) to extract FD information from the CDS FD Directory. Once the data is extracted, the user transfers the extracted data files to the SDC via FTP. Next, via a GUI interface, the user initiates a process to load the CDS FD data into the FD Directory Tables of the TCID structure.

After the TCID tables are created and the CDS FD data loaded, the user initiates a an FD Directory Build process via a GUI interface to populate the TCID tables with derived data and data extracted from the CLCS DBSAFE

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[*] For Redstone, non-GSE data will be extracted from the Central Data Subsystem's FD Directory and loaded into the FD Directory tables in the SDC. Only GSE and Fusion FD data will be obtained from the CLCS DBSAFE Database.

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Database. The required data is selected based on criteria input by the user when initiating the build process and from data defined in the CLCS DBSAFE Database. FD information (i.e., compiler data, hardware data, and test end item address data) is pulled from the CLCS DBSAFE Database and processed into the FD Directory tables. For Redstone, only GSE and Fusion FD data will be obtained from the CLCS DBSAFE Database.

Following successful population of the FD Directory Tables, the user initiates the Gateway Table Build process via a GUI interface. The user specifies the Gateway(s) for which processing tables are to be populated. For each Gateway selected, test end item address data is pulled from the FD Directory and processed into appropriate tables.

After successful completion of the TCID create and build processes, a TCID Install process is initiated via a GUI interface by the user. The installation process extracts data from the TCID tables, organizes the data into deliverable files, and places the deliverable set of files into a TCID Staging Area.. In addition, the installation process selects the application files from the CM Repository and moves these to the TCID Staging Area. The deliverable set of files consists of an OLDB file, Gateway Table file(s), a TCID Descriptor file, a Load Configuration file, and Application Software files (Test End Item Managers, Data Fusion algorithms, Data Health algorithms, DDVT files, etc.).

1.2   CSCI Test Build & Control Specifications

1.2.1   CSCI Test Build & Control Groundrules

The following groundrules and assumptions apply to the Test Build and Control CSCI:

- A Relational Database Management System (RDBMS) will be provided in the SDC to support the creation, population and installation of TCID data.

- RDBMS database instances and tablespaces will be created and deleted by a Database Administrator. These will be pre-allocated in advance of TCID creation.

- Network connectivity will be provided between the SDC and the AUSPEX file server to support access to the CM Repository and TCID Staging Area(s).

- For Redstone, directories and files created for a specific TCID will be manually removed from the TCID Staging Area on the AUSPEX file server when the TCID is no longer needed..

- Application program files, application message files, DDVT files, Data Fusion algorithms, and Data Health algorithms will be obtained from the CM Repository on the AUSPEX file server. These files will be transferred into the repository via the CLCS Development Environment CSCI.

- Application program files, application message files, DDVT files, Data Fusion algorithms, and Data Health algorithms in the CM Repository will be "baselined" according to TCID Responsible System (TCID-RSYS) and TCID via the CLCS Development Environment CSCI.

- Application program files, application message files, DDVT files, Data Fusion algorithms, and Data Health algorithms in the CM Repository will be "tagged" via the CLCS Development Environment CSCI to reflect the development state of the application (e.g., unverified, integrated, verified, etc.).

- For Redstone, user access to the CDS FD Directory unload process will be controlled through the CDS CCMS System Interface (CMSI). Users must have valid accounts on CDS, permissions to access CMSI and CMSI permissions to execute the function.

- User access to SDC-resident Test Build and Control components will be controlled via the access control mechanisms (HTML forms) developed to support CCMS Support Software replatform. Users must be on a valid subnet, have valid accounts on the SDC, and have permissions to execute the build functions.

- All TCID files to be installed on a target CLCS Set will be put into a TCID Staging Area on the AUSPEX file server. The System Control CSCI will be responsible for transferring these files to the Ops CM Servers of the target CLCS sets.

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- Only one TCID will be processed at a time within a single session.

- The DBSAFE CSCI will provide a means of defining a TCID's build requirements prior to initiating the actual TCID build process.

- The DBSAFE CSCI will provide tables for each TCID that define the Vehicle Configuration Number (VCN), DB-RSYS, Database Userid, Control Room Type, Gateway Processor, and Address criteria required to extract Function Designator information from the CLCS DBSAFE Database into the FD Directory for a specified TCID.

- The DBSAFE CSCI will provide tables that define the grouping of Database Responsible Systems to TCID Responsible Systems (TCID-RSYS). There will be a one-to-many correspondence of TCID-RSYS to Command & Control Processors (i.e., a TCID-RSYS will not span multiple CCP's, but a CCP may support multiple TCID-RSYS's).

- The Simulation System will access the FD Directory to create the model databases using the same approach used to support the Shuttle Ground Operations Simulation (SGOS) replatform effort. Changes in data fields in the FD Directory may require changes to the Simulation CSCI.

- The Data Recording, Archival & Retrieval CSCI will access the FD Directory to create the CLCS AP file. This file provides the information necessary to retrieve and evaluate command/measurement data that has been recorded in the SDC on a TCID and FD basis.

- Operational responsibilities for creating, populating and installing a TCID will belong to USA LPS S/W Integration Department.

- The new FD-ID's in the FD Directory will affect the Consolidated Systems Gateway.

- The Consolidated Shuttle Data Stream Gateway relies on the CCMS Common Data Buffer FIFO data stream to supply existing CCMS measurement data to the Consolidated Systems Gateway. This will force a dual build activity - one build for CCMS and one build for CLCS.

- Data Health functions will not require any special build products.

- The TCID will not contain a reference to the OS version of each supported subsystem/platform.

- For Redstone, Fusion FD's will be restricted in this release to currently supported data types (e.g. analog, discrete, digital pattern).

- No Gateway Processor tables will be generated for Fusion FD's. Fusion FD's will be managed by the build software similar to how Pseudo FD's are currently managed.

- FD information extracted from the CDS FD Directory will be manually transferred to SDC via FTP.

- For Redstone, application programs, application message files, DDVT files, Data Health Algorithms and Data Fusion Algorithms will not require any special products for build and will be handled by installation software directly from the CM Repository.

- For Redstone, the CLCS DBSAFE Database will provide GSE and Fusion FD information. All other FD information will be obtained from the CDS FD Directory.

1.2.2 CSC Create TCID

1.2.2.1 Create TCID Functional Requirements

Create TCID provides the database tables into which FD information will be stored on a TCID by TCID basis.

(NOTE: TCID Tables are described in detail in the Test Build and Control Interface Description Document).

1.1 Create TCID shall accept as user input:
- TCID Name and Revision
- Test Build Software Version.

1.2 Create TCID shall create FD Directory Tables to store the following information:
- Common FD Data (e.g., FD Name, Nomenclature, DB-RSYS, etc.)
- Type-specific FD Data (e.g., discrete states, analog coefficients, etc.)
- Source-specific FD Data (e.g., GPC Port, HIM number, RTU number, etc.).

1.3 Create TCID shall create Load Configuration Tables to store the following information:
- TCID Descriptor
    - TCID Name
    - TCID Revision
    - Control Room Type
    - TCID Descriptor File Name
    - FD Directory Build/Edit Revision
    - FD Directory Build/Edit Revision Date and Time
    - Gateway Tables Build/Edit Revision
    - Gateway Tables Build/Edit Revision Date and Time
    - Installation Build/Edit Revision
    - Installation Build/Edit Revision Date and Time
    - Compatible SCID Version
- Gateway Definition
    - Gateway ID
    - Gateway Tables present
- Application S/W Definition
    - TCID Responsible System
    - Databank Responsible System
    - Program Index
    - Program File Type
    - Program Name
    - Program Revision
    - Program Size~~Create TCID shall create Gateway Tables to store the following information for GSE Gateways:~~
    - ~~Gateway ID~~
    - ~~Command/Measurement Data~~
    - ~~Discrete Stimulus FDID Data~~
    - ~~Discrete Measurement FDID Data~~
    - ~~Polling Data~~
    - ~~Engineering Unit Conversion Data.~~

1.4 Create TCID shall create database views of data in the FD Directory to support TCID Install processing.

1.5 Create TCID shall create database views of data in the FD Directory to support Data Analysis and Presentation Application File (AP File) build processing.

1.6 Create TCID shall create database views of data in the FD Directory to support Simulation Model Databank build processing.

1.7 Create TCID shall update the TCID Descriptor Table with the following information:
- TCID Name
- TCID Revision (set to zero)
- TCID Create Date and Time
- Test Build Software Version.

1.8 Create TCID shall generate the following output:
- Schemas for FD Directory Tables, Load Configuration Tables, and other tables/views as required
- Updated TCID Descriptor Table
- Status report (errors, warnings, completion codes, etc.)

~~1.9~~ ~~Create TCID shall create Load Configuration Tables to store the following information:~~
- ~~TCID Definition~~
  - ~~TCID Name~~
  - ~~TCID Revision~~
  - ~~Control Room Type~~
  - ~~TCID Descriptor File Name~~
  - ~~Number of FD's in the TCID~~
  - ~~Number of FD's per DB-RSYS~~
  - ~~Number of FD's per TCID-RSYS~~
  - ~~Number of FD's per Gateway~~
- ~~Online Databank Definition (for the TCID)~~
  - ~~Online Databank Revision~~
  - ~~Online Databank File Name~~
  - ~~Online Databank FDID Index File Name~~
  - ~~Online Databank FD Name Index File Name~~
- ~~Gateway Definition (for each Gateway)~~
  - ~~Gateway ID~~
  - ~~Gateway Tables present~~
  - ~~Gateway Tables sizes~~
  - ~~Gateway Tables File Name~~
  - ~~Gateway Tables Revision~~
- ~~TCID Responsible Systems Definition (for each TCID-RSYS)~~
  - ~~DB-RSYS List~~
- ~~Application S/W Definition (for each TCID-RSYS)~~
  - ~~Program Index~~
  - ~~Program File Type~~
  - ~~Program Name~~
  - ~~Program Revision~~
  - ~~Program Size~~

~~1.9~~ ~~Create TCID shall create TCID Descriptor Tables to store the following information:~~
- ~~TCID Name~~
- ~~TCID Revision Data (e.g., creation dates, update dates, etc.)~~
- ~~CLCS DBSAFE Database Revision Data~~
- ~~Compatible SCID Version Data.~~

~~1.9~~ ~~Create TCID shall create database views of data in the FD Directory to support TCID Install processing.~~

~~1.9~~ ~~Create TCID shall update the TCID Descriptor Table with the following information:~~
- ~~TCID Name~~
- ~~TCID Revision (set to zero)~~

- ~~TCID Create Date and Time~~
- ~~Test Build Software Version.~~

1.9 ~~Create TCID shall generate the following output:~~
- ~~Schemas for FD Directory Tables, Gateway Tables, Load Configuration Table, TCID Descriptor Table, and other tables/views as required~~
- ~~Updated TCID Descriptor Table~~
- ~~Status report (errors, warnings, completion codes, etc.)~~

1.2.2.2 Create TCID Performance Requirements

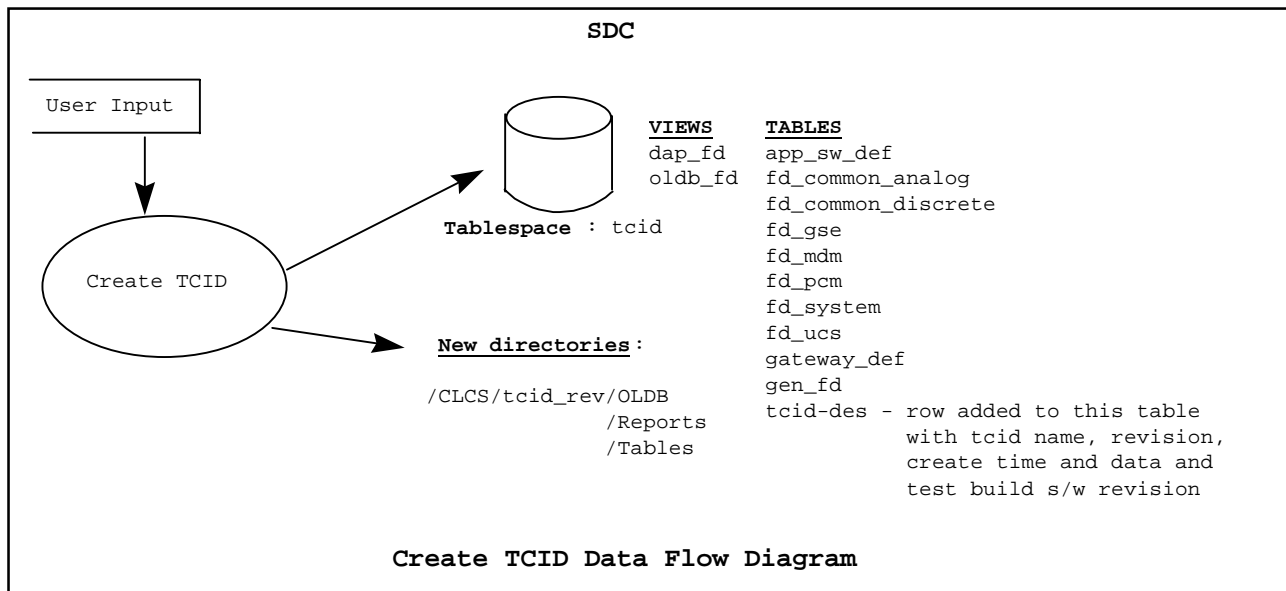There are no known performance requirements for Create TCID at this time.

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1.2.2.3 Create TCID Design Specifications

Create TCID function executes on the SDC to build the database tables and views for storing and retrieving TCID information.   The tables and views are created in tablespaces owned by the TCID which have been pre-allocated in a database instance by a Database Administrator.

1.2.2.3.1 Create TCID Detailed Data Flow

```
                                    SDC

 ┌──────────────┐
 │  User Input  │                        ┌────┐
 └──────────────┘                       │    │
         │                              │    │    VIEWS    TABLES
         │                              │    │    dap_fd   app_sw_def
         ▼                              │    │    oldb_fd  fd_common_analog
                                        └────┘             fd_common_discrete
    ╭──────────╮              Tablespace : tcid            fd_gse
   │            │                                          fd_mdm
   │ Create TCID│                                          fd_pcm
   │            │                                          fd_system
    ╰──────────╯                                           fd_ucs
         │                 New directories:                gateway_def
         │                                                 gen_fd
         ▼             /CLCS/tcid_rev/OLDB                 tcid-des - row added to this table
                                      /Reports                      with tcid name, revision,
                                      /Tables                       create time and data and
                                                                    test build s/w revision

                   Create TCID Data Flow Diagram
```

1.2.2.3.2 Create TCID External Interfaces

Create TCID has no external interfaces to other CSC's.

1.2.2.3.2.1 Create TCID Message Formats

Create TCID will display the error, wanring, and informational messages to the user via an HTML interface. Additionally, all messages will be logged in <path/logfile name> for problem analysis.

The format of messages generated by Create TCID will be as follows:
   "csc_name-nnn-a: message text" where
   - csc_name will be CRTD
   - nnnn is a sequence of numbers associated with the message 0001 through 9999
   - a is the type of message
     - E - error
     - W - warning
     - I - information
   - message text is self-explanatory

All error messages (CRTD-nnnn-E) will cause the Create TCID process to abort.

Warning messages (CRTD-nnnn-W) may have an affect the results of processing.
Informational messages (CRTD-nnnn-I) have no effect on processing.

1.2.2.3.2.2 Create TCID Display Formats

1.2.2.3.2.3 Create TCID Input Formats

There are no specific syntactical rules regarding the input parameters to the HTML form. TCID Name is any valid alphanumeric string. TCID Rev is a valid number in the range of 000-999.

1.2.2.3.2.4 Create TCID Printer Formats

Create TCID does not generate any reports to be printed. The HTML displays may be printed using the existing print capabilities of the browser program.

1.2.2.3.2.5 Create TCID Interprocess Communications

Create TCID does not communicate with any other CSC's.

1.2.2.3.2.6 Create TCID External Interface Calls (e.g., API Calling Formats)

Create TCID does not interface with any other CSC's.

1.2.2.3.2.7 Create TCID Table Formats

Create TCID table formats are described in the CSCI Test Build and Control Interface Description Document.

1.2.2.3.3 Create TCID Test Plan

Validation testing for the Create TCID will take place by bringing up the Create TCID HTML form and performing the following actions:
1. Execute the Create TCID HTML form with missing data for each entry field. Verify appropriate error messages appear. Verify that appropriate error messages appear in the error log file.
2. Execute the Create TCID HTML form with correct data in all entry fields. Verify that appropriate completion messages appear. Log onto the CABSVR and verify the correct directories were created.

1.2.3 CSC CDS FD Unload

1.2.3.1 CDS FD Unload Functional Requirements:

1.1 CDS FD Unload accept as user input.
- TCID Name
- Output Pathname.

1.2 CDS FD Unload shall extract FD information for all FD's in the CDS FD Directory.

1.3 CDS FD Unload shall generate a FDID number for each extracted FD.

1.4 CDS FD Unload shall replace the CCMS System Software Revision Number (SSRN) with generated FDID number.

1.5 CDS FD Unload shall convert CDS FD information into CLCS compatible form (scaling, coefficients, buffer length, etc.)

1.6 CDS FD Unload shall convert extracted FD data from BCD to ASCII.

1.7 CDS FD Unload shall generate the following output:
- FD Common Data File
- PCM FD Data File
- GSE FD Data File
- MDM FD Data File
- UCS FD Data File
- System FD Data File
- Discrete FD Data File
- Analog FD Data File
- Calibration FD Data File.

~~**1.8**~~ ~~CDS FD Unload shall generate the following output:~~
- ~~FD Common Data File~~
- ~~Source Derived Data File~~
- ~~PCM FD Data File~~
- ~~GSE FD Data File~~
- ~~MDM FD Data File~~
- ~~UCS FD Data File~~
- ~~System FD Data File~~
- ~~Discrete FD Data File~~
- ~~Analog FD Data File~~

1.2.3.2 CDS FD Unload Performance Requirements

There are no known performance requirements for CDS FD Unload at this time.

1.2.3.3 CDS FD Unload Design Specifications

The Central Data System (CDS) Function Designator (FD) Directory Unload procedure is executed on CDS using the CCMS Support Software Interface (CMSI). Data files are produced from a Test Configuration Identifier (TCID) on CDS to be loaded into the FD Directory tables.

1.2.3.3.1 CDS FD Unload Detailed Data Flow
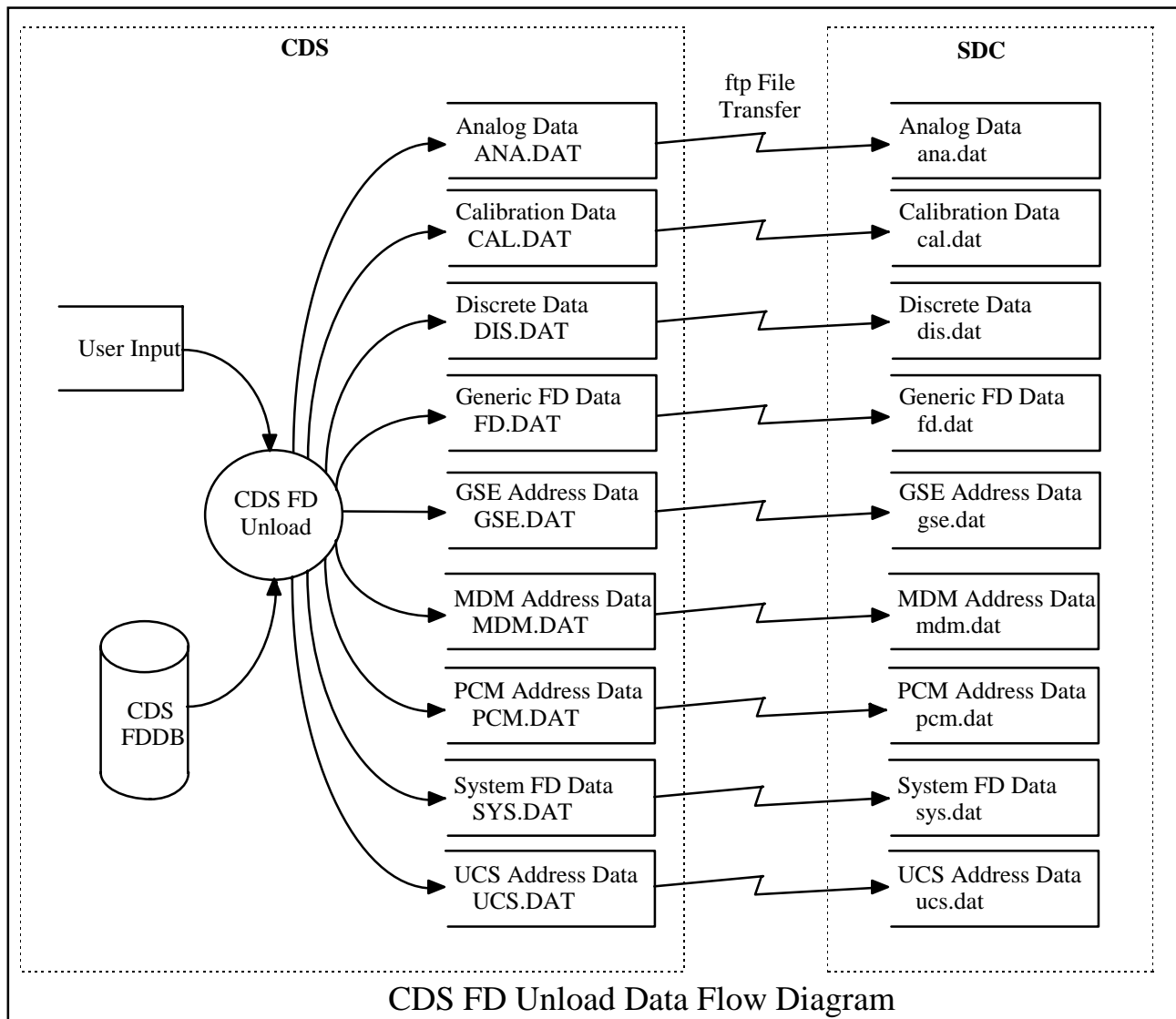
CDS FD Unload Data Flow Diagram

1.2.3.3.2 CDS FD Unload External Interfaces

CDS FD Unload produces several SQL*Loader output files (as illustrated above) which are input to the FD Directory Load CSC.

1.2.3.3.2.1 CDS FD Unload Message Formats

Batch job status messages are provided by the CDS operating system and the CMSI interface.

1.2.3.3.2.2 CDS FD Unload Display Formats

CDS FD Unload sample CMSI transcript follows.

```
*CMSI
CMSI#33
.~
CMSI33 - RELEASE IE12


AI1736,P,JF,041 ,LOCKHEED,7-5042

.
07/11/97-11:43


READY
**   FDDBDUMP
TCID NAME??  SHH16A
TCID SOFTWARE REV LEVEL?? H1
OUTPUT DIRECTORY CAT/FILE STRING??  AIA001/JIM/CLCS/SHH16A
DEFERRED QUEUE (Y/N)??  N
  disposition?  J
JOB BEING PROCESSED

SNUMB 8014V

8014V -00   EXECUTING    @ 10.661
8014V -01   WAIT-ALOC    @ 10.662
8014V -01   EXECUTING    @ 10.664
8014V -02   EXECUTING    @ 10.665.
8014V -03   WAIT-PERIP   @ 10.681
8014V -03   EXECUTING    @ 10.683
8014V -03   TERMINATING  @ 10.687
8014V - ONLINE OUTPUT FINISHED @ 10.688
normal termination
```

1.2.3.3.2.3 CDS FD Unload Input Formats

Inputs are prompted for by the CMSI interface. The required parameters are the TCID name from which data is to be unloaded, the CCMS software revision level at which the TCID was created, and the CDS catalog file string in which the output files are to be written.

1.2.3.3.2.4 CDS FD Unload Printer Formats

The CDS batch job initiated by CMSI provides output of operating system statistics. The FD Unload procedure produces one report found in report code 74 in activity 02 of the batch job. A sample of the output follows.

```
8014V 02  06-18-97   10.667                                                         PAGE
2


    1 FILES ALLOCATED,                                          BUFFERS  99


 AREA #   1  RNG     1  -     1162 BASESIZE -   1162
 FILCD/AREA   RANGE     PAGESIZE   PAGES/PAGE  LINES/PAGE  LLINKS ALOC  LLINKS NEC ACCESS MODE INVENTORY

    FD/ 1    1- 1162   640          1          63          2327         2326      READ        80%

CPU STATISTICS FOR FD UNLOAD FOR TCID SHH16A

                                     FUNCTION DESIGNATOR COUNTS BY DATA TYPE

CPU             AM           DPM          DM
NAME    THDS    PA     AS    PDP    DPS    PD     DS     FP    AMDP   MWDP   OTHERS    TOTALS

GS1A      0     638    12    44     33    1898   958     0     0      0      0        3583
GS2A      0     223     4    16     12     578   294     0     0      0      0        1129
PG1       0      18     0     8      0      37     0     0     0      0     42         105

TOTALS    0     881    16    68     45    2513  1252     0     0      0     42        4817
```

1.2.3.3.2.5 CDS FD Unload Interprocess Communications

CDS FD Unload selects data from a CDS TCID and creates files for transfer to SDC. These files are used by the FD Directory Load CSC. There is no direct communication between these CSCs.

1.2.3.3.2.6 CDS FD Unload External Interface Calls (e.g., API Calling Formats)

1.2.3.3.2.7 CDS FD Unload Table Formats

1.2.3.3.3 CDS FD Unload Test Plan

Testing will consist of running CDS FD Unload for a TCID and comparing the output report statistics with the output statistics from the CDS TCID Build obtainable from LPS System Build. The Function Designator counts from the output report should also correspond to the number of records written to the data files.

1.2.4 CSC FD Directory Load

1.2.4.1 Functional Requirements:

1.1 FD Directory Load shall accept as user input:
- TCID Name and Revision
- A SQL*Loader control file containing references to extracted data files.

1.2 FD Directory Load shall validate the user-supplied TCID Name against the TCID Descriptor Table.

1.3 FD Directory Load shall load modified FD information into the FD Directory Tables.

1.4 FD Directory Load shall generate the following output:
- Updated FD Directory Tables
- Status reports (SQL loader log file, error report, etc.)

1.2.4.2 FD Directory Load Performance Requirements

There are no known performance requirements for FD Directory Load at this time.

1.2.4.3 FD Directory Load Design Specifications

FD Directory Load executes on the SDC to populate the database tables of a TCID with FD information supplied in SQL*Loader files generated by the CDS FD Unload CSC.

1.2.4.3.1 FD Directory Load Detailed Data Flow

This diagram provides a pictorial representation of the data flow between external sources and destinations and the major and minor functions of FD Directory Load.

SDC

Analog Data
ana.dat

Calibration Data
cal.dat

Discrete Data
dis.dat

Generic FD Data
fd.dat

GSE Address Data
gse.dat

MDM Address Data
mdm.dat

PCM Address Data
pcm.dat

System FD Data
sys.dat

UCS Address Data
ucs.dat

User Input

SQL*Loader
Log File

FD
Directory
Load

FD
Directory
Build
Tables

SQL*Loader
Bad Data File

SQL*Loader
Control File

FD Directory Load Data Flow Diagram

1.2.4.3.2 FD Directory Load External Interfaces

FD Directory Load has no external interfaces with other CSC's.

1.2.4.3.2.1 FD Directory Load Message Formats

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The format of messages generated by FD Directory Load will be as follows:

"csc_name-nnn-a: message text" where

- csc_name will be FDDL
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
    - E - error
    - W - warning
    - I - information
- message text is self-explanatory

All error messages (FDDL-nnnn-E) will cause the FD Directory Load process to abort.
Warning messages (FDDL-nnnn-W) may have an affect the results of processing.

Informational messages (FDDL-nnnn-I) have no effect on processing.

FD Directory Load will display the following messages to the user. Additional messages and runtime statistics will be written on the SQL*Loader log file produced by the process.

FDDL-0001-E: TCID name is mandatory.
FDDL-0002-E: TCID xxxxxx not found.
FDDL-0003-E: Unable to log on to TCID xxxxxx,.
FDDL-0004-E: User must belong to group clcssw.
FDDL-0003-E: Data file pathname is mandatory.
FDDL-0004-E: Invalid pathname for data and/or output files.
FDDL-0005-E: Unable to find data file xxxxxxxx.

1.2.4.3.2.2 FD Directory Load Display Formats

Function Designator Directory Build FD Load

To load data extracted from a TCID on CDS, enter the TCID Name and the pathname of the directory containing the data and an optional pathname of the directory for log files (default will be the same directory as the data). Select the tables to be loaded and click "Perform Load".

Enter TCID Name: [ ]

Enter pathname of CDS FD Unload data files: [ ]

Enter pathname of output (log files, bad data files): [ ]

Select which tables to load:

- ☑ fd.dat data for GEN_FD Table
- ☑ ana.dat data for FD_COMMON_ANALOG Table
- ☑ dis.dat data for FD_COMMON_DISCRETE Table
- ☑ sys.dat data for FD_SYSTEM Table
- ☐ gse.dat data for FD_GSE Table
- ☑ mdm.dat data for FD_MDM Table
- ☑ pcm.dat data for FD_PCM Table
- ☐ ucs.dat data for FD_UCS Table
- ☐ cal.dat data for CAL_FD Table

[Clear Fields] [Perform Load]

Last modified: Fri Jul 18 08:53:41 EDT

Function Designator Directory FD Load

To load data extracted from a TCID on CDS, enter the TCID Name and the pathname of the directory containing the data and an optional pathname of the directory for log files (default will be the same directory as the data). Select the tables to be loaded and click "Perform Load".

Enter TCID Name: [   ]

Enter pathname of CDS FD Unload data files: [   ]

Enter pathname of output (log files, bad data files): [   ]

Select which tables to load:
- ☑ fd.dat data for GEN_FD Table
- ☑ ana.dat data for FD_COMMON_ANALOG Table
- ☑ dis.dat data for FD_COMMON_DISCRETE Table
- ☑ sys.dat data for FD_SYSTEM Table
- ☐ gse.dat data for FD_GSE Table
- ☑ mdm.dat data for FD_MDM Table
- ☑ pcm.dat data for FD_PCM Table
- ☐ ucs.dat data for FD_UCS Table
- ☐ cal.dat data for CAL_FD Table

[Clear Fields] [Perform Load]

Last modified: Fri Jul 18 08:53:41 EDT

1.2.4.3.2.3 FD Directory Load Input Formats

Inputs are entered on the HTML form illustrated above. The TCID Name is required and must have previously been created by the Create TCID CSC. The pathname of the CDS FD Unload data files is required and must be a directory containing the data files produced by the CDS FD Unload CSC. The user must have read permissions to these files. The pathname of the output files is optional. The default is the same directory as the data file directory. The user must have write permissions to this directory. There must be at least one table selected to load.

1.2.4.3.2.4 FD Directory Load Printer Formats

SQL*Loader will provide a log file and any bad data or error files as needed. The FD Directory Load procedure itself produces no reports.

1.2.4.3.2.5 FD Directory Load Interprocess Communications

FD Directory Load populates tables in a TCID created by the Create TCID CSC using data extracted from CDS by the CDS FD Unload CSC. There are no direct communications between these CSCs.

1.2.4.3.2.6 FD Directory Load External Interface Calls (e.g., API Calling Formats)

There are no external interface calls associated with FD Directory Load.

1.2.4.3.2.7 FD Directory Load Table Formats

The table formats used are described in the CSCI Test Build and Control Interface Definition Document.

1.2.4.3.3 FD Directory Load Test Plan

1.2.4.3.3.1 Test Environment

Validation testing for FD Directory Load will take place in the Shuttle Data Center development environment as described below:

1. FD Directory Load validation will occur in the SDC lab.
2. FD Directory Load will be initiated on the SDC CAB Server.
3. FD Directory tables will reside in the DEV6 ORACLE database on the CAB Server.

1.2.4.3.3.2 Prerequisites

1. Table spaces must be created for the subject TCID.
2. All required database permissions must be set for the subject TCID.
3. Create TCID CSC must be successfully executed to create the FD Directory tables for the subject TCID.
4. Subject TCID must exist in the TCID Descriptor Table (Create TCID CSC).
5. CDS TCID data generated via the CDS FD Unload CSC must be in a directory accessible to the user.
6. User must belong to the clcssw group.

1.2.4.3.3.3 Test Cases

The following tests will be performed for FD Directory Load.

1. Execute the FD Directory Load HTML form with invalid data for each entry field.
2. Execute the FD Directory Load HTML form with no tables selected for loading.
3. Execute the FD Directory Load HTML form as user not belonging to the clcssw group.

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1.2.5 CSC FD Directory Build

1.2.5.1 FD Directory Build Functional Requirements

1.1 FD Directory Build shall accept as user input:
- TCID Name and Revision
- Test Build Software Release Level
- <u>(optional) Gateway build directive and a list of up to 12 gateways.</u>
- ~~(optional) Gateway build directive.~~

1.2 FD Directory Build shall, based on the TCID Name and Revision, obtain parameters from the CLCS DBSAFE Database that define the data selection criteria for a TCID. These include the following:
- Control Room Type
- VCN's and associated Revision Numbers
- Database Userid's
- Formats
- TCID-RSYS's
  (NOTE: "Format" refers to the primary field of an FD's hardware end item address. For GSE, format equates to HIM number; for PCM format equates to telemetry format; etc.).

1.3 FD Directory Build shall validate the user-supplied TCID Name against the TCID Descriptor Table.

1.4 FD Directory Build shall validate the user-supplied TCID Name and Revision against the TCID configurations defined in the CLCS DBSAFE Database.

1.5 FD Directory Build shall validate software compatibility against the Test Build Software Version contained in the TCID Descriptor Table.

1.6 FD Directory Build shall accept an optional Gateway build directive to add, delete or rebuild FD's for a specific Gateway, provided the Gateway is defined for the TCID in the CLCS DBSAFE Database.

1.7 If no Gateway build directive is specified, FD Directory Build shall generate FD data for all Gateways defined for the TCID in the CLCS DBSAFE Database.

1.8 FD Directory Build shall validate the TCID Configuration Definition is locked from update.

1.9 FD Directory Build shall validate the VCN's for the TCID are locked from update.

1.10 FD Directory Build shall validate the Database Userid's for the TCID are locked from update.

1.11 FD Directory Build shall validate the Formats for the TCID are locked from update.

1.12 FD Directory Build shall use the following criteria to include an FD in the FD Directory:
- FD has a VCN association that is defined for the TCID in the CLCS DBSAFE Database
- FD has a Link Indicator/Format association that is defined for the TCID in the CLCS DBSAFE Database
- FD has a DB-RSYS association that is defined for the TCID in the CLCS DBSAFE Database
- FD has a Database Userid association that is defined for the TCID in the CLCS DBSAFE Database
- If an FD meets the above selection criteria on multiple VCN's or Formats, then the VCN or Format with the highest Database Userid priority is chosen.

1.13 FD Directory Build shall convert FD information extracted from the CLCS DBSAFE Database to appropriate formats (e.g., ASCII to Integer, etc.) as necessary.

1.14 FD Directory Build shall insert/update FD Directory tables with compiler-related, hardware-related and test end item address-related data obtained from the CLCS DBSAFE Database as determined by the above selection criteria.

1.15 FD Directory Build shall assign a unique FDID to each FD.

1.16 FD Directory Build shall update the TCID Descriptor Table with the following information:
- ~~TCID Revision~~

- FD Directory Revision
- FD Directory Revision Date and Time
- Control Room Type

1.17 ~~FD Directory Build shall update the Load Configuration Table with the following information:~~
- ~~Control Room Type~~
- ~~TCID Responsible Systems~~
- ~~Database Responsible Systems~~
- ~~Gateway ID's~~
- ~~Number of FD's in the TCID~~
- ~~Number of FD's per DB-RSYS~~
- ~~Number of FD's per TCID-RSYS~~
- ~~Number of FD's per Gateway by data type~~

1.17 FD Directory Build shall report an error and terminate processing if any of the following conditions are true:
- TCID Name and Revision is indecipherable
- TCID Name and Revision is not defined in the CLCS DBSAFE Database
- FD Directory Build software is incompatible with the TCID structures
- TCID Configuration defined for the TCID is not locked
- VCN's defined for the TCID are not locked
- Database Userid's defined for the TCID are not locked
- Formats defined for the TCID are not locked.

1.18 Upon completing the population of the FD Directory Tables, FD Directory Build shall update the following items in the CLCS DBSAFE Database:
- TCID Create Date and Time
- Test Build S/W Version
- CLCS DBSAFE Database Revision

1.19 FD Directory Build shall generate the following output:
- Updated FD Directory Tables
- Updated TCID Descriptor Table
- ~~Updated Load Configuration Table~~
- Status Report (warnings, errors, information, completion codes, etc.).

1.2.5.2 FD Directory Build Performance Requirements

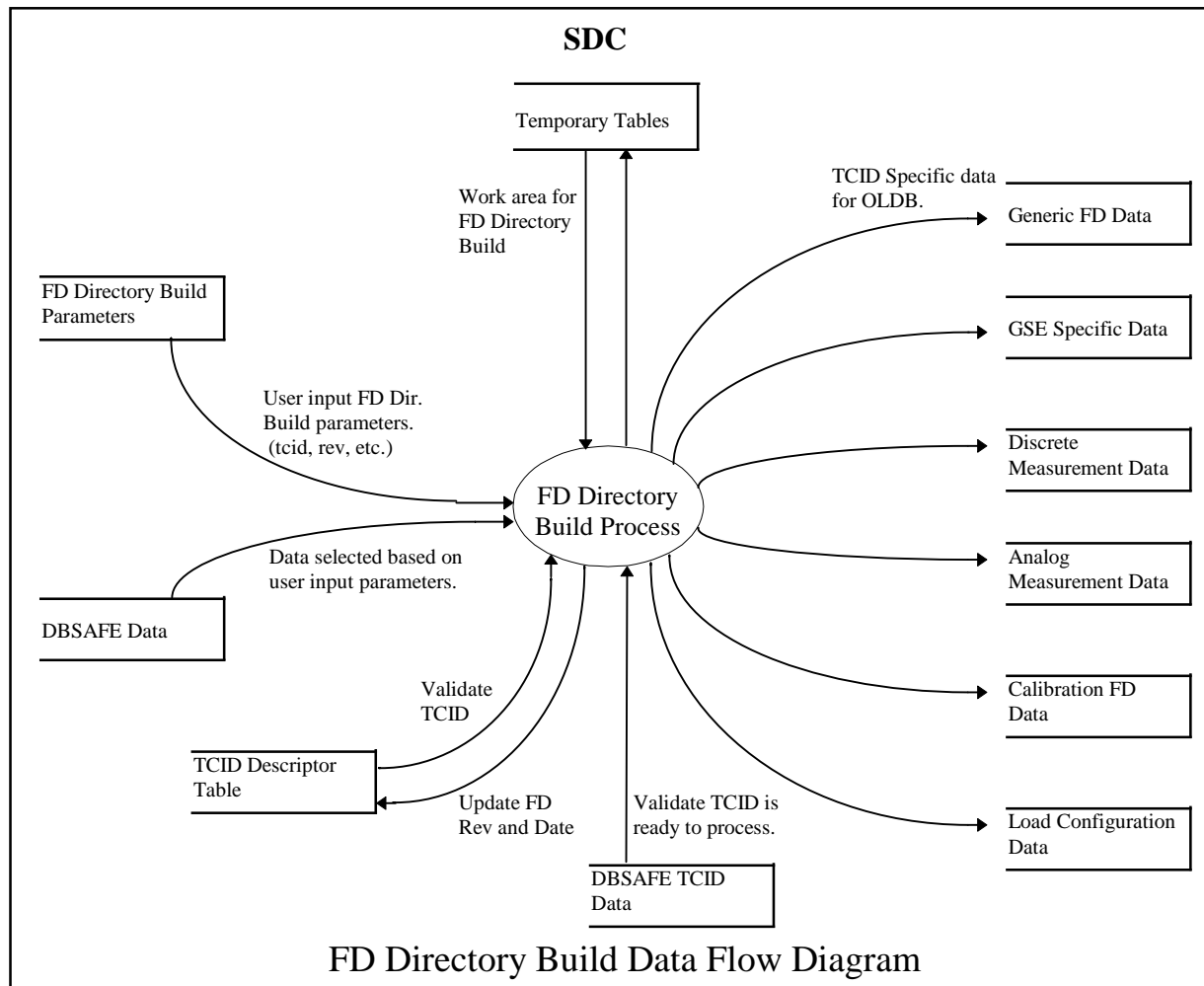There are no known performance requirements for FD Directory Build at this time.

1.2.5.3   FD Directory Build Design Specifications

FD Directory Build is designed to be executed on SDC after the Create TCID CSC (and after FD Directory Load for Redstone) and before the Gateway Table Build and TCID Installation CSCs. FD Directory build selects TCID specific data from DBSAFE based on user input at execution and loads the data into the FD Directory tables which are used by Gateway Table Build and TCID Installation CSCs.

1.2.5.3.1   FD Directory Build Detailed Data Flow

SDC

Temporary Tables

Work area for
FD Directory
Build

TCID Specific data
for OLDB.

Generic FD Data

FD Directory Build
Parameters

User input FD Dir.
Build parameters.
(tcid, rev, etc.)

GSE Specific Data

Discrete
Measurement Data

**FD Directory
Build Process**

Data selected based on
user input parameters.

Analog
Measurement Data

DBSAFE Data

Calibration FD
Data

Validate
TCID

TCID Descriptor
Table

Update FD
Rev and Date

Validate TCID is
ready to process.

Load Configuration
Data

DBSAFE TCID
Data

FD Directory Build Data Flow Diagram

1.2.5.3.2   FD Directory Build External Interfaces

FD Directory Build interfaces with the DBSAFE Database to obtain the TCID build selection criteria and Function Designator information.

1.2.5.3.2.1 FD Directory Build Message Formats

The format of messages generated by FD Directory Build will be as follows:

"csc_name-nnn-a: message text" where

- csc_name will be FDDB
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

All error messages (FDDB-nnnn-E) will cause the FD Directory Load process to abort.
Warning messages (FDDB-nnnn-W) may have an affect on processing results.
Informational messages (FDDB-nnnn-I) have no effect on processing.

FD Directory Build will display the following status messages to the user. Additionally, all messages will be logged in <path/logfile name> for problem analysis.

~~Message Number =~~ FDDB-0001-E: Error on CONNECT to database.
~~Message Number =~~ FDDB-0002-E: Error selecting MAX rtcn_fdid..
~~Message Number =~~ FDDB-0004-E: No matching TCID/rev in descriptor table.
~~Message Number =~~ FDDB-0005-E: Error selecting fds for gen_fd table
~~Message Number =~~ FDDB-0006E: Error selecting measurement data for fd_common_discrete table
~~Message Number =~~ FDDB-0007-E: Error selecting stimulus data for fd_common_discrete table
~~Message Number =~~ FDDB-0008-E: Error selecting measurement data for fd_common_analog table
~~Message Number =~~ FDDB-0009-E: Error selecting stimulus data for fd_common_analog table
~~Message Number =~~ FDDB-0010-E: Error selecting common system data for fd_system table
~~Message Number =~~ FDDB-0011-E: Error selecting gse source data for fd_gse table
~~Message Number =~~ FDDB-0012-E: Error selecting mdm source data for fd_mdm table
~~Message Number =~~ FDDB-0013-E: Error selecting pcm source data for fd_pcm table
~~Message Number =~~ FDDB-0014-E: Error selecting ucs source data for fd_ucs table
~~Message Number =~~ FDDB-0015-E: Error selecting calibration data for cal_fd table
~~Message Number =~~ FDDB-0016-E: Error building temp tables.
~~Message Number =~~ FDDB-0017-E: Error creating temp_src_data table for <current_src>.
~~Message Number =~~ FDDB-0018-E: Error selecting fds for fd_%s source table.
~~Message Number =~~ FDDB-0019-E: No gateways specified for edit.
~~Message Number =~~ FDDB-0020-E: Error creating temp_gw_table.
~~Message Number =~~ FDDB-0021-E: Error inserting gateway list into temp_gw_dir table.
~~Message Number =~~ FDDB-0022-E: No TCID specified.
~~Message Number =~~ FDDB-0023-E: No userid specified.
~~Message Number =~~ FDDB-0024-E: Invalid command line arguments.
~~Message Number =~~ FDDB-0025-E: Error creating temp table for report values.
~~Message Number =~~ FDDB-0026-I: <time date> BEGIN FD Directory Build processing.
~~Message Number =~~ FDDB-0027-I: <time date> EXIT FD Directory Build processing.

1.2.5.3.2.2 FD Directory Build Display Formats

The following diagrams document the HTML display used to initiate the FD Directory Build process.

CLCS FD Directory Build

Submission of this completed form will initiate the FD Directory Build process. Select the applicable software release level and enter a valid TCID Name and Rev. Edit option defaults to Add and Gateways defaults to ALL. If build is only required for specific gateways, select the applicable gateways via the check boxes.

Software Release Level:

● Redstone	○ Thor	○ Atlas	○ Titan	○ Scout

TCID Name:		**TCID Rev:**

Edit Option:

● Add	○ Delete

Gateways:

☐ GS1A

☐ GS2A

☐ GS5

☑ ALL GATEWAYS

[FD Build]   [Cancel Build]

Author: D. Sheets / USA 5222 / USK-504 / (407)861-7757
Last Revised:

1.2.5.3.2.3   FD Directory Build Input Formats

The FD Directory Build process can be initiated from the HTML form or from the command line. However, the command line interface is not intended for the end-user. The following parameters are required.

clcsfddb (object name to initiate FD Directory Build)
-t <tcid>
-r <rev number>
-e <gateway build directive A=Add, D=Delete> <gateway list>

Note: The gateway build directive allows for the adding or deleting data for a specific list of gateways. This parameter is optional and when it is specified it must be followed by at least one and up to twelve gateway names. When specified, the gateway build directive should be the last parameter specified followed immediately by the list of applicable gateways.

Example: clcsfddb -t SA084A -r 0 -e A GS1A GS2A

1.2.5.3.2.4   FD Directory Build Printer Formats

FD Directory Build provides one printable report which shows parameters and status for the build. The format of the report is as follows:

FD DIRECTORY BUILD

USER ID: SGG35A   **DATE**: 08-JUL-97
TCID: SGG35A   **FDDB REV**: 14
TCID REV: 0

BUILD DIRECTIVE: A
GATEWAYS: GS1A GS2A

CONTROL ROOM ID: FR

TOTAL FDs: 4757

STATUS MESSAGES:

FDDB-0026-I: 15:37:30 07/08/97   BEGIN FD Directory Build processing.
FDDB-0027-I: 15:40:32 07/08/97   EXIT FD Directory Build processing.

1.2.5.3.2.5 FD Directory Build Interprocess Communications

- Selects data from DBSAFE (CSC).
- Populates FD Directory tables created by Create TCID (CSC).
- FD Directory tables are used by Gateway Table Build (CSC) and TCID Install (CSC).

1.2.5.3.2.6 FD Directory Build External Interface Calls (e.g., API Calling Formats)

The FD Directory Build is called by the HTML form which is specifically for initiating this process or can be initiated from the command line. The command line interface is not intended for the end-user. Any calls to initiate this process should use the following calling format:

Example: clcsfddb -t SA084A -r 0 -e A GS1A GS2A

clcsfddb (object name to initiate FD Directory Build)
-t <tcid>
-r <rev number>
-e <gateway build directive A=Add, D=Delete> <gateway list>

Note: The gateway build directive allows for the adding or deleting data for a specific list of gateways. This parameter is optional and when it is specified it must be followed by at least one and up to twelve gateway names. When specified, the gateway build directive should be the last parameter specified followed immediately by the list of applicable gateways.

1.2.5.3.2.7 FD Directory Build Table Formats

See table formats in the CSCI Test Build and Control Interface Definition Document.

1.2.5.3.3 FD Directory Build Test Plan

1.2.5.3.3.1 Test Environment

Validation testing for FD Directory Build will take place in the Shuttle Data Center development environment as described below:

1. FD Directory Build validation will occur in the SDC lab.
2. FD Directory Build will be initiated on the SDC CAB Server.
3. FD Directory tables will reside in the DEV6 ORACLE database on the CAB Server.
4. Data will be extracted from the CLCS DBSAFE DEV7 ORACLE database on the CAB Server.

1.2.5.3.3.2 Prerequisites

1. Table spaces must be created for the subject TCID.
2. All required database permissions must be set for the subject TCID.
3. Create TCID CSC must be successfully executed to create the FD Directory tables for the subject TCID.
4. Subject TCID must exist in the TCID Descriptor Table (Create TCID CSC).
5. Subject TCID and its associated data must exist in the CLCS DBSAFE Database.
6. Group must be set to CLCSSW via the command: > **newgrp clcssw**

1.2.5.3.3.3 Test Cases

The following test cases apply to FD Directory Build for the Redstone release. These tests should be initiated from the command line via:

clcsfddb -t <tcid> -r <tcid rev> -e <A edit option> <optional gateway list>

Example: clcsfddb -t SGG35A -r 0 -e A GS1A GS2A

Note: The -e edit option is an optional argument. If not specified, FD Directory Build will process all gateways for the specified tcid. For the Redstone release, only the **A**dd edit option is available. If an edit option is specified, a gateway list consisting of one to twelve gateways must be specified. If no edit option is specified no gateways should be specified.

A graphical user interface will be available in a future release.

Condition: Error connecting to database.
Procedure: The following error will result if the user fails to issue the **newgrp clcssw** command or if an invalid tcid is supplied on the command line.
Result: Display error: FDDB-0001-E: Error on CONNECT to database.
FD Directory Build aborts, no table changes have occurred.

Condition: No matching TCID/Rev in descriptor table.
Procedure: Initiate FD Directory Build specifying a valid tcid with a rev number otherthan the rev number in the tcid descriptor table.
Result: Display error: FDDB-0003-E: No matching TCID/rev in descriptor table.
FD Directory Build aborts, no table changes have occurred.

Condition: TCID not locked.
Procedure: Initiate FD Directory Build against a tcid that is not in a locked state.
Result: Display error: FDDB-0004-E: TCID <tcid:rev> does not exist or is not locked in DBSAFE.
FD Directory Build aborts, no table changes have occurred.

Condition: Error building temporary work tables required by FD Directory Build.
Procedure: The following error will result if the temporary tables from a previous unsuccessful attempt to run FD Directory Build were not successfully dropped. This can be tested by connecting to the database via the tcid and creating one of the temporary tables prior to initiating the FD Directory build process. (ie. CREATE TABLE temp_gw_dir (gw_name VARCHAR2(5) NOT NULL);)
Result: Display error: FDDB-0016-E: Error building temp tables.
Any existing temp tables will be dropped.
FD Directory Build aborts, no FD Directory table changes have occurred.

Condition: Invalid command line arguments.
Procedure: Initiate FD Directory Build with invalid command line arguments. See the following examples.
      clcsfddb -t -r 0   (no tcid)
      clcsfddb -t SGG35A (no rev)
      clcsfddb (no command line arguments)
      clcsfddb -t SGG35A -r 0 -e A (edit option with no gateways specified)
Result: Display error: FDDB-nnnn-E: <appropriate error message for condition>
FD Directory Build aborts, no FD Directory table changes have occurred.

Condition: Successful FD Directory Build.
Procedure: Initiate FD Directory Build with valid command line arguments for an existing tcid/rev.
      ie. **clcsfddb -t SGG35A -r 0**
      ie. **clcsfddb -t SA084A -r 0**
      ie. **clcsfddb -t SHG18B -r 0 -e A GS1A GS2A**
Result: Updated FD Directory Tables with the correct number of rows added. (See table below).
Updated fd rev and fd rev date in the tcid descriptor table (tcid_des).
FDDB report showing successful completion <path/filename>.

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FD Directory Table Name	SGG35A	SA084A	SHG18B
gen_fd	4757	13322	4712
fd_gse	4757	13322	4712
fd_common_discrete	3750	10043	3728
fd_common_analog	902	2724	879
fd_system	0	0	0
cal_fd	46	148	38

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1.2.6 CSC Gateway Table Build

1.2.6.1 Gateway Table Build Functional Requirements

[NOTE: For Redstone, Gateway Table Build is limited to GSE data]

1.1   Gateway Table Build shall accept as input from user:
  - TCID Name and Revision
  - Gateway Processor Names
  - (optional) Pathname of a file containing a special processing directives applicable to the Gateways specified.

1.2   Gateway Table Build shall validate the TCID Name and Revision against the TCID Descriptor Table.

1.3   Gateway Table Build shall validate software compatibility against the Test Build Software Version contained in the TCID Descriptor Table.

1.4   Gateway Table Build shall limit table build processing to Gateways specified via user input (i.e., a subset of those defined for the TCID).

1.5   For GSE Gateways, Gateway Table Build shall process an input file that contains directives for reserving a specified number of 10 sample per second null entries in the sublist for changing FD sample rates in real-time.

1.6   Gateway Table Build shall output an warning message and discard further entries if the main polling table list becomes full.

1.7   ~~Gateway Table Build shall output an error message and terminate if the main polling table list becomes full.~~

1.7   Gateway Table Build shall process FD information in the FD Directory to populate the following deliverable TCID files for GSE Gateways:
  - Command/Measurement Data Table (CMDT)
  - Discrete Stimulus FDID Table
  - Discrete Measurement FDID Table
  - Polling Table
  - Engineering Unit Conversion Table.

1.8   Gateway Table Build shall update the TCID Descriptor Table with the following information:
  - Gateway Tables Revision
  - Gateway Tables Revision Date and Time

1.9   Gateway Table Build shall update the Gateway Definition Table with the following information:
  - Gateway ID
  - Gateway Tables present

1.10 ~~Gateway Table Build shall process FD information in the FD Directory to populate the following tables for GSE Gateways:~~
  - ~~Gateway ID~~
  - ~~Command/Measurement Data Table (CMDT)~~
  - ~~Discrete Stimulus FDID Table.~~
  - ~~Discrete Measurement FDID Table~~
  - ~~Polling Tables~~
  - ~~Engineering Unit Conversion Tables~~

1.10 ~~Gateway Table Build shall update the TCID Descriptor Table with the following information:~~
  - ~~Gateway Tables Revision~~
  - ~~Gateway Tables Revision Date and Time~~

1.10 ~~Gateway Table Build shall update the Load Configuration Table with the following information:~~

- ~~Gateway Tables present~~
- ~~Table sizes:~~
  - ~~Command/Measurement Data Table Size~~
  - ~~Discrete Stimulus FDID Table Size~~
  - ~~Discrete Measurement FDID Table Size~~
  - ~~Polling Tables Size~~
  - ~~Engineering Unit Conversion Tables Size.~~

1.10 Gateway Table Build shall generate the following output:
- Updated GSE Gateway Tables as defined above.
- Updated TCID Descriptor Table as defined above.
- Updated Gateway Definition Table as defined above.
- ~~Update Load Configuration Table as defined above.~~
- Status report (warning, errors, information, completion codes, etc.)

1.2.6.2 Gateway Table Build Performance Requirements

There are no known performance requirements for Gateway Tables Build at this time.

1.2.6.3 Gateway Table Build Design Specifications

Gateway Table Build executes on the SDC to generate the process control tables required by Gateway Processors to acquire data and issues commands from/to a test end item. Information needed to build the tables is obtained from the FD Directory and from user input.

1.2.6.3.1 Gateway Table Build Detailed Data Flow

Gateway Table Build Data Flow Diagram
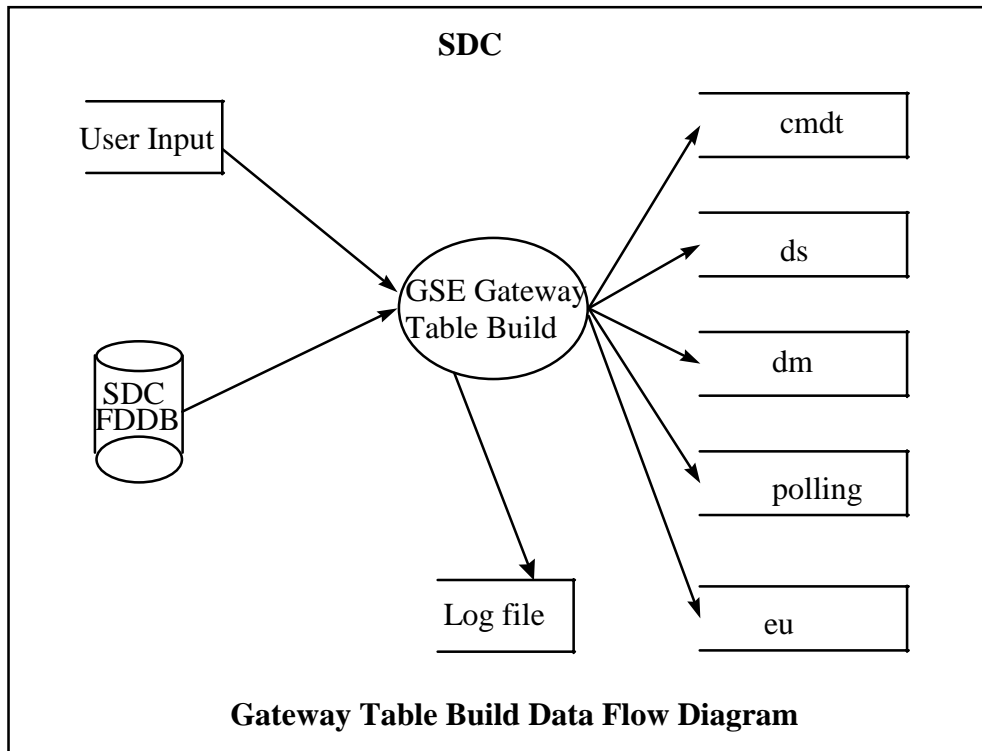
1.2.6.3.2 Gateway Table Build External Interfaces

Gateway Table Build has no external interfaces.

1.2.6.3.2.1 Gateway Table Build Message Formats

The format of messages generated by Gateway Table Build will be as follows:
> "csc_name-nnn-a: message text" where
> - csc_name will be GATEWAY_BLD
> - nnnn is a sequence of numbers associated with the message 0001 through 9999
> - a is the type of message
>   - ♦ E - error
>   - ♦ W - warning
>   - ♦ I - information
> - message text is self-explanatory

All error messages (GATEWAY_BLD -nnnn-E) will cause the FD Directory Load process to abort.
Warning messages (GATEWAY_BLD -nnnn-W) may have an affect on processing results.
Informational messages (GATEWAY_BLD -nnnn-I) have no effect on processing.

~~Gateway Table Build will use the following message format:~~
~~"csc_name-nnn-a: message text" where~~

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csc_name will be GATEWAY_BLD
nnnn is a sequence of numbers associated with the message 0001 through 9999
0001 - error opening (%s) file
0002 - error closing (%s) file
0003 - error writing to (%s) file
0004 - error writing to (%s) linked list
0010 - login to database failed
0011 - logout of database failed
0020 - initialization error occurred
0021 - unable to retrieve group name
0022 - unable to retrieve group ID
0023 - unable to retrieve home directory
0024 - unable to retrieve login user ID
0025 - unable to retrieve user ID
0026 - unable to change directory to (%s)
0050 - no valid data found in (%s)
0100 - error 100 Hz table overflow
0101 - the following FDs occurred after table overflow: (%s)
0102 - failure to write to polling table has occurred
0103 - HIM count exceeds 16
0200 - a bit mask error occurred on HIM (%s), card (%s), function_code (%s), bit_mask (%s)
0201 - data exceeds maximum length
0300 - invalid data_type (%s)
GATEWAY_BLD-0001-E: ERROR OPENING (%s) FILE
GATEWAY_BLD-0002-W: ERROR CLOSING (%s) FILE
GATEWAY_BLD-0004-E: ERROR WRITING TO (%s) LINKED LIST
GATEWAY_BLD-0010-E: LOGIN TO ORACLE DATABASE FAILED WITH SQLCODE(%d)
GATEWAY_BLD-0011-W: LOGOUT OF ORACLE DATABASE FAILED
GATEWAY_BLD-0012-E: LOGIN TO ORACLE DATABASE FAILED WITH SQLCODE(%d)
GATEWAY_BLD-0013-E: LOGOUT OF ORACLE DATABASE FAILED
GATEWAY_BLD-0014-E: ERROR DURING A DATABASE TRANSACTION
GATEWAY_BLD-0015-E: ERROR DECRYPTING DATABASE PASSWORD
GATEWAY_BLD-0019-E: UNABLE TO RETRIEVE LSDN PATH
GATEWAY_BLD-0020-E: INITIALIZATION ERROR OCCURRED
GATEWAY_BLD-0021-E: UNABLE TO RETRIEVE GROUP NAME
GATEWAY_BLD-0023-E: UNABLE TO RETRIEVE HOME DIRECTORY
GATEWAY_BLD-0024-E: UNABLE TO RETRIEVE USER NAME
GATEWAY_BLD-0025-E: UNABLE TO RETRIEVE USER ID
GATEWAY_BLD-0026-E: UNABLE TO CHANGE DIRECTORIES TO %s
GATEWAY_BLD-0027-W: UNABLE TO CREATE DIRECTORY(%s)
GATEWAY_BLD-0050-W: NO VALID DATA FOUND IN (%s)
GATEWAY_BLD-0060-I: BEGINNING TO PROCESS %s
GATEWAY_BLD-0061-I: COMPLETED PROCESSING %s
GATEWAY_BLD-0100-E: 100 HZ TABLE OVERFLOW HAS OCCURRED
GATEWAY_BLD-0101-E: THE FOLLOWING FD(s) OCCURRED AFTER OVERFLOW:
GATEWAY_BLD-0103-I: HIM COUNT EXCEEDS 16
GATEWAY_BLD-0201-E: DATA EXCEEDS MAXIMUM LENGTH
GATEWAY_BLD-0300-E: INVALID DATA-TYPE(%s) READ
GATEWAY_BLD-0401-I: SUCCESSFULLY CREATED CMDT FOR %s
GATEWAY_BLD-0402-I: SUCCESSFULLY CREATED DM TABLE FOR %s
GATEWAY_BLD-0403-I: SUCCESSFULLY CREATED DS TABLE FOR %s
GATEWAY_BLD-0404-I: SUCCESSFULLY CREATED EU TABLE FOR %s
GATEWAY_BLD-0405-I: SUCCESSFULLY CREATED %s FOR %s

GATEWAY_BLD-0406-I: SUCCESSFULLY CREATED TABLE BUILD REPORT FOR %s
GATEWAY_BLD-0500-W: ERROR EXECUTING SQL STATEMENT %s
GATEWAY_BLD-0501-W: SQLCODE %d ERROR RECEIVED

~~a is the type of message~~
- ~~E - error~~
- ~~W - warning~~
- ~~I - information~~
- ~~message text is self-explanatory~~

Example, "GATEWAY_BLD-0050-W: NO VALID DATA FOUND IN MY_FILE"
would mean:
- GATEWAY_BLD error message
- error number 0050
- warning
- no valid data was found inside the file MY_FILE

1.2.6.3.2.2 Gateway Table Build Display Formats

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Gateway Tables Build

TCID Name:		TCID Rev:	

GATEWAY1:		NULL1:	
GATEWAY2:		NULL2:	
GATEWAY3:		NULL3:	
GATEWAY4:		NULL4:	
GATEWAY5:		NULL5:	

Build Tables   Cancel Build

1.2.6.3.2.3 Gateway Table Build Input Formats

Gateway Table Build GUI's and processes will have the capability to be executed from a terminal window command line. Certain parameters are accepted for the various executables as noted below:

- TCID Name and Revision
- Gateway Processor Names and null slot requests.
- Pathname of a file containing special processing directives may be implemented.

1.2.6.3.2.4 Gateway Table Build Printer Formats

Gateway Table Build provides an output file that can be printed. The resulting files will be under predefined system directories as defined in the Test Build and Control Interface Description Document:

- Command/Measurement Data Table (cmdt)
- Discrete Measurement (dm)
- Discrete Stimulus (ds)
- Engineering Unit (eu)
- Poll Rate Tables (100 Hz, 10 Hz, 1 Hz) (polling)
- Table Build Report (tablebld_report)

1.2.6.3.2.5 Gateway Table Build Interprocess Communications

Gateway Table Build performs no interprocess communications

1.2.6.3.2.6 Gateway Table Build External Interface Calls (e.g., API Calling Formats)

Gateway Table Build does not have any external interfaces with other CSC's.

1.2.6.3.2.7 Gateway Table Build Table Formats

Gateway Table Build Table Formats adhere to all requirements as defined in the "GSE Gateway Services Table Load and Initialization CSC Detailed Design Specification" sections 1.3.2.4.1 through 1.3.2.4.5.

1.2.6.3.3 Gateway Table Build Test Plan

1.2.6.3.3.1 Test Plan Procedure

- Login to FDDIR
- Gather FD data
- Process data
- Create tables (cmdt, dm, ds, eu, polling)
- Create report (tablebld_report)
- Report errors, warnings, and/or information messages
- Verify, by hand, creation and content of files (tables and report)

1.2.6.3.3.2 Process for Content Verification of files (tables and report)

1.2.6.3.3.2.1 Command Measurement Data Table (cmdt)

The first entry of the CMDT equals the number of entries in the table.

Current Value and Flags default to zeros.

Enable Mask defaults to 00ff.

All Discrete Stimulus, Discrete Measurement, Analog Stimulus, and Analog Measurement RTCN_FDID's have an entry in the CMDT which contains a pointer into a corresponding table. Digital Pattern RTCN_FDID's have index values of zero. RTCN_FDID's are not displayed for Discrete Measurements or Discrete Stimulus.

Example:
GS1A CMDT:

TYPE	SUB	CURR TYPE	HIM VAL	HIM ADDR	ENABL CHAN	DELAY MASK	INDEX	FLAGS	RTCN-FDID
01	01	0000	00be	0063	00ff	0000	000b	00000000	00001c0b
02	01	0000	0012	0092	00ff	0000	000c	00000000	000043b2
03	01	0000	0023	00e4	00ff	0000	00a8	00000000	00000000
04	01	0000	00be	005a	00ff	0000	0001	00000000	00000000
05	04	0000	0081	001e	00ff	0000	0000	00000000	00004281
06	02	0000	00be	0003	00ff	0000	0000	00000000	00004d90

For CMDT line 1:
  Data type is assigned to be 01 (AM).
  Per SQL pull from Gen_fd, subtype is assigned as AU (01).
  Him address per SQL pull from Fd_gse is octal 276(hex 00be, dec 190).
  Channel address is calculated from the card and function code. Octal 143
    (hex 0063, dec 99).
  Index into EU table is line 000b (dec 11) as defined below:

EU line 0b (dec 11): 0.00000 0.00000 0.00000 0.00000 +1.0239999E+02 -6.0000000E-01
Corresponding Cal_fd_name for EU line 0b is CLCS-12772 per SQL.
 Per SQL pull from Fd-common_analog, rtcn_fdid 7179(hex 1c0b)
 has cal_fd_name of CLCS-12772.

For CMDT line 2, AS values are determined in the same way AM values are.

For CMDT line 3:
 Data type is assigned to be 03 (DM).
 Per SQL pull from Gen_fd, subtype is assigned as BD (01).
 Him address per SQL pull from Fd-gse is octal 043(hex 0023, dec 33).
 Channel address is calculated from the card and function code. Octal 344 (hex 00e4, dec 228).
 Index into the DM table is line a8 as follows for rtcn_fdid 1d6c:
   DM table:
   1d68 1d69 1d6a 1d6b 1d6c 0000 1d6d 0000

For CMDT line 4:
 Data type is assigned to be 04(DS).
 Per SQL pull from Gen_fd, subtype is assigned as BD (01).
 Him address per SQL pull from Fd-gse is octal 276 (hex 00be, dec 190).
 Channel address is calculated from the card and function code. Octal 132 (hex 005a, dec 90).
 Index into the DS table is line 01 as follows for rtcn_fdid 1018:
   DS table:
   1018 106e 1072 1076

For CMDT line 5:
 Data type is assigned to be 05 (DPM).
 Per SQL pull from Gen_fd, subtype is assigned as BIN (04).
 Him address per SQL pull from Fd-gse is octal 201 (hex 0081, dec 129).
 Channel address is calculated from the card and function code. Octal 036 (hex 001e, dec 30).

For CMDT line 6
 Data type is assigned to be 06 (DPS).
 Per SQL pull from Gen_fd, subtype is assigned as OCT (02).
 Him address per SQL pull from Fd-gse is octal 276 (hex 00be, dec 190).
 Channel address is calculated from the card and function code. Octal 003 (hex 0003, dec 3).

1.2.6.3.3.2.2   Discrete Measurement Table (dm)

The Discrete Measurement Table is a list of all Discrete Measurement RTCN_FDID's.

The first entry in the table equals the number of Discrete MeasurementRTCN_FDID's in the table.

Each row in the table contains a list of up to 8 RTCN_FDID's for a unique him, card, and function code.

Start bits determine the positions within the rows. The least significant bit in the record is the first entry in the channel, the most significant bit is last. When all 8 start bits for a row are not required, the unused positions are filled with zeros.

CMDT index from the CMDT table into this table corresponds to the row in the DM table where the RTCN_FDID is located.

 Example:

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The following is a line from the Discrete Measurement table:
    0000 1a41 1011 1015 1019 106f 1073 1077

Per SQL pull for rtcn_fdid's #1a41(dec 6721), #1011(dec 4113),
  #1015(dec 4117), #1019(dec 4121), #106f(dec 4207), #1073(dec 4211),
  #1077(dec 4215).

HIM	CA	FUNCTION_CODE	START_BIT
276	13	4	6
276	13	4	5
276	13	4	4
276	13	4	3
276	13	4	2
276	13	4	1
276	13	4	0

  note: Him, Card, and Function Code are octal numbers.

1.2.6.3.3.2.3   Discrete Stimulus Table (ds)

The Discrete Stimulus Table is a list of all Discrete Stimulus RTCN_FDID's.

The first entry in the table equals the number of Discrete Stimulus RTCN_FDID's in the table.

Each row in this table contains a list of up to 4 RTCN_FDID's for a unique him, card, and function code.

Start bits determine the positions within the rows. The least significant bit in the channel is the first entry in the record, the most significant bit is last. When all 4 start bits for a row are not required, the unused positions are filled with zeros.

CMDT index from the CMDT table into this table corresponds to the row in the DS table where the RTCN_FDID is located.

 Example:
 The following is a row from the GS1A Discrete Stimulus table:
        1018 106e 1072 1076

Per SQL pull for #1018(dec 4120), #106e(dec 4206), #1072(dec 4210),
  and #1076(dec 4214), the HIM, Card Address, Function Code and
  Start Bit are as follows:

HIM	CA	FUNCTION_CODE	START_BIT
276	13	2	3
276	13	2	2
276	13	2	1
276	13	2	0

  (note: Him, Card, Function code are octal numbers)

1.2.6.3.3.2.4   Engineering Unit Table (eu)

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The Engineering Unit conversion tables contain the coefficient for performing a fifth order polynomial conversion on analog measurements and a first order conversion for analog commands.

The first entry in the Engineering Units table equals the number of entries in the table.

Analog measurements and analog stimulus share the same EU table.

Multiple RTCN_FDID's with the same EU coefficients will access the same EU index line.

Example:
EU table entry:
0.00000 0.00000 0.00000 0.00000 +1.0239999E+02 -6.0000000E-01

CMDT table entry:

TYPE	SUB	CURR TYPE	HIM VAL	HIM ADDR	ENABL CHAN	DELAY MASK	INDEX	FLAGS	RTCN-FDID
01	01	0000	00be	0063	00ff	0000	000b	00000000	00001c0b

CMDT's Index into EU table is line 000b(dec 11) as defined below:
EU line 0b: 0.00000 0.00000 0.00000 0.00000 +1.0239999E+02 -6.0000000E-01
   Corresponding Cal_fd_name for EU table line 0b is CLCS-12772 per SQL.
    Per SQL pull from Fd-common_analog, rtcn_fdid 7179(hex 1c0b)
    has cal_fd_name of CLCS-12772.

1.2.6.3.3.2.5

Poll Rate Table (polling)

There are three Polling Tables (100hz, 10hz, and 1hz) maintained in the one file (polling).

The first entry in each Polling Table equals the number of entries in that table.

The Polling Tables contain measurement opportunities for all RTCN_FDID's that have polling rates per SQL pulls.

100hz Polling Table consists of 100 entries. Any Function Designators with polling rates of 100 or greater that are encountered after the 100th entry in this table will be flagged as overflows and not included in the table. Command opportunities (00000002) are spaced every 20 slots. Entries into the 10hz table (00000003) are calculated from the number of 10hz entries, plus the number of null slots in the 10hz table. Measurement opportunities (00000001) require that the CMDT measurement pointed to by the CMDT Index, a hex value, be polled. RTCN_FDID's with a sample rate greater than 100 have multiple entries in the table according to their sample rates. The Bit Mask defaults to zero.

10hz Polling Table is variable in size. Null slots are added in multiples of 10 per user request. Only slot types of 00000001 and 00000003 are valid in this table. Entries into the 1 hz tables (00000003) are calculated from the number of 1 hz entries. Measurement opportunities (00000001) are executed in the same manner as the 100hz table. The table is padded to the next highest multiple of 10.

1hz Polling Table is variable in size. Only slot type of 00000001 is valid in this table. Measurement opportunities (00000001) are executed in the same manner as the 100hz table. The table is padded to the next highest multiple of 10.

Example:
100hz Polling Table:

Slot Type	CMDT Index	Bit Mask
00000002	00000000	0000
00000003	00000000	0000
00000001	0000008b	0000

In this example, the rtcn_fdid found on line 8b (dec 139) in the CMDT will
  be polled.(RTCN_FDID hex 1eae, dec 7854)
  CMDT line hex 8b(dec 139) : 02 01 0000 0008 0061 00ff 0000 0001 00000000 00001eae

1.2.6.3.3.2.6 Table Build Report

The Tablebld_report displays the TCID name, partition, and revision as entered by the user. The system date and time are inserted by the program.

Each Gateway Table software that is built is displayed along with its individual tables, and the number of entries in those tables. The counts displayed in this table correspond to the first entries in each of the individual tables.

The number of entries in each table does not include nulls or zeroes except for the Polling Tables (Table_100_hz_ll, Table_10_hz_ll, Table_1hz_ll, and Polling Total).

1.2.7 CSC TCID Install

1.2.7.1 TCID Install Functional Requirements

1.1 TCID Install shall accept as user input:
- TCID Name and Revision
- System Software Configuration Identifier (SCID) Version Number
- Selection criteria for the application software to be installed
- ~~(optional) AP File Load execution directive.~~

1.2 TCID Install shall validate the user-supplied TCID Name and Revision against the TCID Descriptor Table.

1.3 TCID Install shall validate software compatibility against the Test Build Software Version contained in the TCID Descriptor Table.

1.4 TCID Install shall issue a warning if the revision level of the FD Directory exceeds the revision level of the Gateway Tables.

1.5 TCID Install shall access the CM Repository to derive (based on TCID, TCID-RSYS, and the user-supplied selection criteria) a list of application program names and revisions to be included in the TCID.

1.6 TCID Install shall create a unique index number for each application program to be included in the TCID.

1.7 TCID Install shall update the Load Configuration Table with the following information based on each application program's associated TCID-RSYS:
- Application Program Index
- Application Program File Type
- Application Program Name
- Application Program Revision
- Application Program Size (in bytes)

1.8 TCID Install shall update the TCID Descriptor Table with the following information:
- Installation Revision
- Installation Revision Date and Time
- SCID Version Number

1.9 TCID Install shall extract information from the tables that comprise a TCID to create the following set of deliverable files:
- TCID Description
- Online Databank
- Online Databank FDID Index
- Online Databank FD Name Index
- Gateway Tables Definition File
- Application Software Definition File
- ~~Gateway Tables File for each Gateway~~

~~1.10~~ ~~TCID Install shall update the Load Configuration Table with the following information:~~
- ~~Online Databank File Name~~
- ~~Online Databank FDID Index File Name~~
- ~~Online Databank FD Name Index File Name~~
- ~~Gateway Table File Name for each Gateway~~
- ~~TCID Description File Name~~

1.10 ~~TCID Install shall extract information from the Load Configuration Table of the TCID to create a Load Configuration File.~~

1.10 TCID Install shall copy the deliverable TCID files from the SDC into the directory structure in the TCID Staging Area defined by the System Control CSCI.

1.11 TCID Install shall copy application program files associated with the TCID from the CM Repository into the directory structure in the TCID Staging Area defined by the System Control CSCI. Program files will be based on the user-specified selection criteria.

1.12 TCID Install shall perform Little Endian (SDC) to Big Endian conversion on TCID product files as required.

1.13 The TCID Installation process will generate the following output:
- Files for the Online Database, TCID Description, , GSE Gateway Definition, Application Software Definition, DDVT, Data Fusion Algorithms, Data Health Algorithms, Application software, and Application Message Files
- Updated TCID Descriptor Table
- ~~Files for Online Databank, Load Configuration, GSE Gateway, DDVT, Data Fusion Algorithms, Data Health Algorithms, Application software, Application Message Files~~
- ~~Updated TCID Descriptor Table~~
- ~~Updated Load Configuration Table~~
- Status report (warning, errors, information, completion codes, etc.).

1.2.7.2 TCID Install Performance Requirements

There are no known performance requirements for TCID Install at this time.

1.2.7.3 TCID Install Design Specifications

TCID Install is executed on the SDC to create the TCID product files from tables in a TCID database structure and to transfer these files to the TCID staging area on a CLCS file server. TCID Install also collects the application software files from the CM Repository and places these in the TCID staging area.

1.2.7.3.1 TCID Install Detailed Data Flow

TCID Install Data Flow Diagram
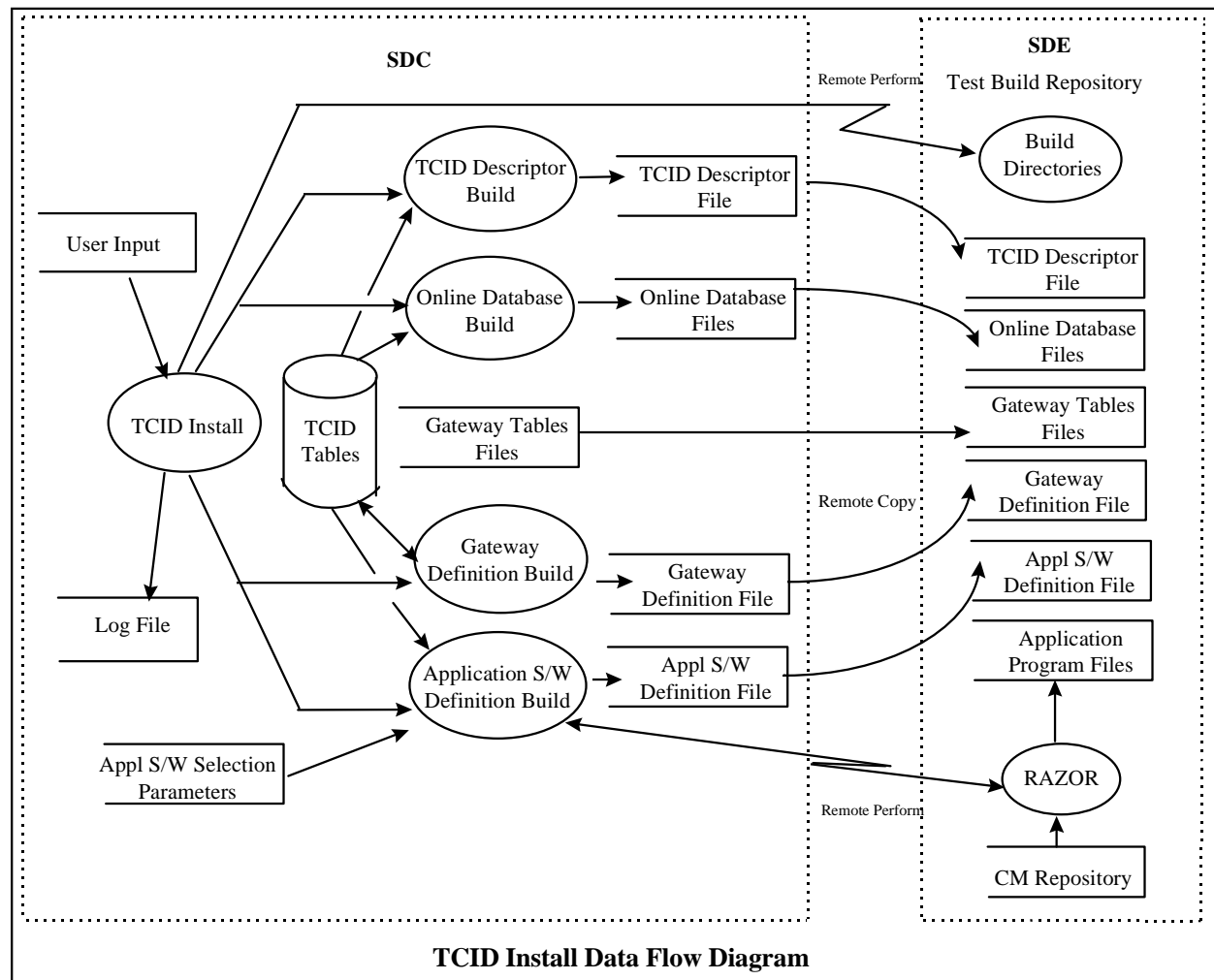
1.2.7.3.2 TCID Install External Interfaces

TCID Install interfaces with the RAZOR CM tool to fetch application program files from the CM Repository.

~~TCID Install interfaces to the Sherrill-Lubinski Graphics Management System (SL-GMS) to perform target platform builds of the graphics libraries required by certain HCI applications.~~

1.2.7.3.2.1 TCID Install Message Formats

The format of messages generated by TCID Install will be as follows:

"csc_name-nnn-a: message text" where

- csc_name will be INSTALL
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

All error messages (INSTALL-nnnn-E) will cause the FD Directory Load process to abort. Warning messages (INSTALLL-nnnn-W) may have an affect on the processing results.

Informational messages (INSTALLL-nnnn-I) have no effect on processing.

INSTALL-0000-I: (tcid_desc_drv) Initiating Build of TCID Description File
INSTALL-0002-E: (tcid_desc_drv) Invalid Number of Input Parameters
INSTALL-0003-I: (tcid_desc_drv) Input Parameters: TCID=%s TCID Rev=%d
INSTALL-0004-E: (tcid_desc_drv) Unable to Allocate Memory for TCID Record
INSTALL-0005-E: (tcid_desc_drv) Bad return from tcid_conn
INSTALL-0006-E: (tcid_desc_drv) Bad return from get_tcid_desc
INSTALL-0007-E: (tcid_desc_drv) Bad return from write_tcid_desc
INSTALL-0008-I: (tcid_desc_drv) TCID Description File Build Successfully Completed ~~\n~~
INSTALL-0009-E: (tcid_conn) ORACLE Connect Error Detected
INSTALL-0010-E: (get_tcid_desc) TCID %s REV %d Not Found
INSTALL-0011-E: (get_tcid_desc) SQL Select Error Encountered
INSTALL-0012-E: (write_tcid_desc) File Allocation Failed for File: %s
INSTALL-0013-E: (write_tcid_desc) Write Failed for TCID Descriptor File %s
INSTALL-0014-I: (tcid_oldb_drv) Initiating Build of Online Database
INSTALL-0015-E: (tcid_oldb_drv) Unable to Allocate Memory for OLDB Structure
INSTALL-0016-E: (tcid_oldb_drv) Invalid Number of Input Parameters
INSTALL-0017-E: (tcid_oldb_drv) Bad Return from open_oldb_files
INSTALL-0018-E: (tcid_oldb_drv) Bad Return from tcid_conn
INSTALL-0019-E: (tcid_oldb_drv) Bad Return from get_tcid_oldb
INSTALL-0020-E: (tcid_oldb_drv) Bad Return from close_oldb_files
INSTALL-0021-E: (tcid_oldb_drv) Bad Return from updt_lct_oldb
INSTALL-0022-I: (tcid_oldb_drv) Online Database Files Build Successfully Completed ~~\n~~
INSTALL-0023-E: (open_oldb_files) Unable to Allocate OLDB_FD File
INSTALL-0024-E: (open_oldb_files) Unable to Allocate OLDB_FDID File
INSTALL-0025-E: (open_oldb_files) Unable to Allocate OLDB_FDN File
INSTALL-0026-E: (close_oldb_files) Unable to Close OLDB_FD File
INSTALL-0027-E: (close_oldb_files) Unable to Close OLDB_FDID File
INSTALL-0028-E: (close_oldb_files) Unable to Close OLDB_FDN File
INSTALL-0029-I: (get_tcid_oldb) Processing %d FDs
INSTALL-0030-E: (get_tcid_oldb) SQL Select Error Encountered
INSTALL-0031-E: (tcid_oldb_drv) Error Sorting FDID Index File, RC=%d

1.2.7.3.2.2 TCID Install Display Formats

CLCS TCID Install

Submission of this completed form will initiate the installation of CLCS TCID files into the Test Build Repository directory on the CLCS File Server. Select the applicable software release level and enter a valid TCID Name, Revision Number and compatible SCID Version ID. Select the products to be installed. If installing application software, supply a fully qualified pathname of an input file specifying the application program files to install.

Software Release Level:

● Redstone	○ Thor	○ Atlas	○ Titan	○ Scout

TCID Name: [   ] **TCID Rev:** [   ]

Installation Option:

☐ Online Database

☐ Tables

☐ Applications

☑ All

Application S/W Specifications: [   ]

[Install]   [Cancel]

Author: *C. Filko / USA 5222 / USK–504 / (407)861–7748*
Last Revised: *July 28, 1997 10:23:45 EDT*

1.2.7.3.2.3   TCID Install Input Formats

TCID Install inputs are supplied via the HTML form illustrated above. In addition, when installing application program files, a user input file specifying the TCID Responsible System, application program file name and application program file revision are also required. The format of this file is as follows (each item is separated by blanks or comma and each record is delimited by a newline:

Record	Item	Item Description	Format
1-N	1	TCID Responsible System	1-6 characters
	2	Application Program File Name	1-128 characters
	3	Application Program Revision Number	1-10 characters

1.2.7.3.2.4 TCID Install Printer Formats

TCID Install will produce no specific printer output. Status and information messages will be output to stdout which is routed to the HTML form. Additionally, all messages will be logged in <path/logfile name> for problem analysis.

1.2.7.3.2.5 TCID Install Interprocess Communications

TCID Install will interface with the RAZOR configuration management tool and the Sherrill-Lubinski Graphics Management System.

1.2.7.3.2.6 TCID Install External Interface Calls (e.g., API Calling Formats)

TCID Install will use remote shell capabilities to perform RAZOR functions required for locating and fetching application program files from the CM Repository for those application program files defined in the input file.

TCID Install will use remote copy and remote shell capabilities to perform Sherrill-Lubinski Graphics Management System (SL-GMS) functions required for generation of the display files on the target platforms.

1.2.7.3.2.7 TCID Install Table Formats

TCID Install will update tables in the TCID on the SDC to reflect the creation date and time of the deliverable TCID product files. The format and content of the tables and files modified by and created by TCID Install are described in the Test Build and Control Interface Description Document.

1.2.7.3.3 TCID Install Test Plan

Validation testing for the TCID Install will take place by bringing up the TCID Install HTML form and performing the following actions:
1. Execute TCID Install with missing data for each entry field. Verify appropriate error messages appear. Verify that appropriate error messages appear in the error log file.
2. Execute TCID Install to install only Online Database files. Verify only online database files are generated and transferred to the TCID Staging Area. Review the Online Database files to verify proper format and compare entries in the file with information in the Online Database view of the FD Directory. Verify that both index files correctly reference the FD Records in the Online Database FD file.
3. Execute TCID Install to install only Gateway Tables files. Verify only gateway tables files are transferred to the TCID Staging area.
4. Execute TCID Install to install only Application Program files. Select a set of applications to be installed and build an input file. Supply the input file via the HTML form. Verify the software correctly fetches and transfers the application program files to the TCID Staging Area. Verify that SL-GMS applications generate successfully.
5. Execute TCID Install to install all items (Online Database files, Gateway Tables files, Application Program files). Repeat verification actions of items 2-4 above.